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1996-04-MA-FEIS-EXPANSION OF CENTRAL MAUI
SANITARY LANDFILL PROJECT

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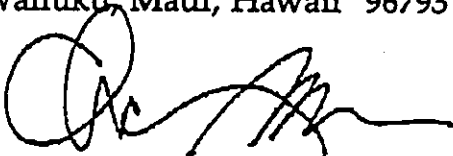
FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE
EXPANSION OF CENTRAL MAUI SANITARY LANDFILL PROJECT
APRIL 1996

This Environmental Document is Submitted
Pursuant to Chapter 343, HRS

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PROPOSING AGENCY:

Department of Public Works and Waste Management
Solid Waste Division
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793



Charles Jencks
Director of Public Works and Waste Management

ACCEPTING AUTHORITY:

Department of Public Works and Waste Management
Solid Waste Division
County of Maui

PREPARED BY:

Masa Fujioka & Associates
99-1205 Halawa Valley Street, Suite 302
Aiea, Hawaii 96701-3281
(808) 484-5366

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1.0 SUMMARY

The County of Maui has determined that the existing Central Maui Sanitary Landfill is reaching its capacity and, therefore, that an additional solid waste disposal site is needed. Instead of constructing a new landfill at a new location, the County has decided to expand the existing Central Maui Sanitary Landfill (see Figure 1-1). By implementing this expansion, a new landfill site will not have to be searched for and operation and maintenance of the Central Maui Landfill can simply continue onto the expansion following the closure of the original landfill.

The proposed project includes Phases IV, V and VI which are separated from the original landfill Phases I, II, and III by Kalialinui Gulch. Because the proposed new phases of the landfill are not a true lateral extension of the existing landfill boundaries, i.e., the existing landfill and proposed landfill are separated by the Gulch, the proposed landfill is not technically considered an expansion under 40 CFR §258. However, we have referred to it as an expansion in this document, since it is located adjacent to the existing landfill.

Phases IV and V are currently being used by a quarry operation and Phase VI is currently occupied by sugar cane but is scheduled for quarry operations in the future. This site is centrally located with respect to the major population centers of Maui, yet it is also in a rural, agricultural district. Expanding the landfill into areas where the quarry operation is completed eliminates the need for large-scale excavation, and stockpiled cover material may be available on site. This combination of a central yet rural location and compatible physical characteristics makes the site operationally and environmentally well-suited for the expansion of the existing Central Maui Landfill.

The proposed expansion is consistent with existing land-use plans, policies and controls for the affected area. It responds to the objectives and policies of the Hawaii State Plan, the General Plan of the County of Maui, and the Wailuku-Kahului Community Plan. A Special Use Permit will be completed to ensure that the landfill expansion is consistent with the State Land Use District regulations. The proposed expansion also complies with a variety of other program controls (see section 4 of this EIS for details). Permits and approvals will be obtained from the State of Hawaii Department of Health, the State Land Use Commission, and the County of Maui Department of Public Works & Waste Management (see sections 11 and 12).

The proposed project will have both beneficial and adverse environmental impacts. The primary beneficial impact will occur in the area of public services and facilities: a continuation of 1) a centrally located landfill site that will eliminate the difficulties of locating a new landfill site, and 2) the accommodation of the County's solid waste disposal needs, considering Phases IV, V and VI, through at least the year 2016 (Bryan A. Stirrat & Associates, 1994a).

The landfill will also protect the public health by providing a new, operating facility that will prevent the existing landfills from exceeding their design capacity.

The primary potential adverse impact is in the area of contamination of groundwater and surface water resources. Leachate is a product of the decomposition of solid waste and the percolation of rain and surface water through the layers of waste. Contaminated surface water or leachate from the landfill can have significant adverse effects on neighboring streams, irrigation ditches, and groundwater resources if allowed to escape offsite. The proposed expansion is located far from the nearest public water supply well and its design will include many mitigation measures to control leachate and surface water flows. These measures will minimize the possibility of groundwater contamination by providing control of the leachate produced by the landfill, both during the operation and after closure of the landfill. In addition, surface water flows will be routed around landfilled areas and into a sedimentation basin.

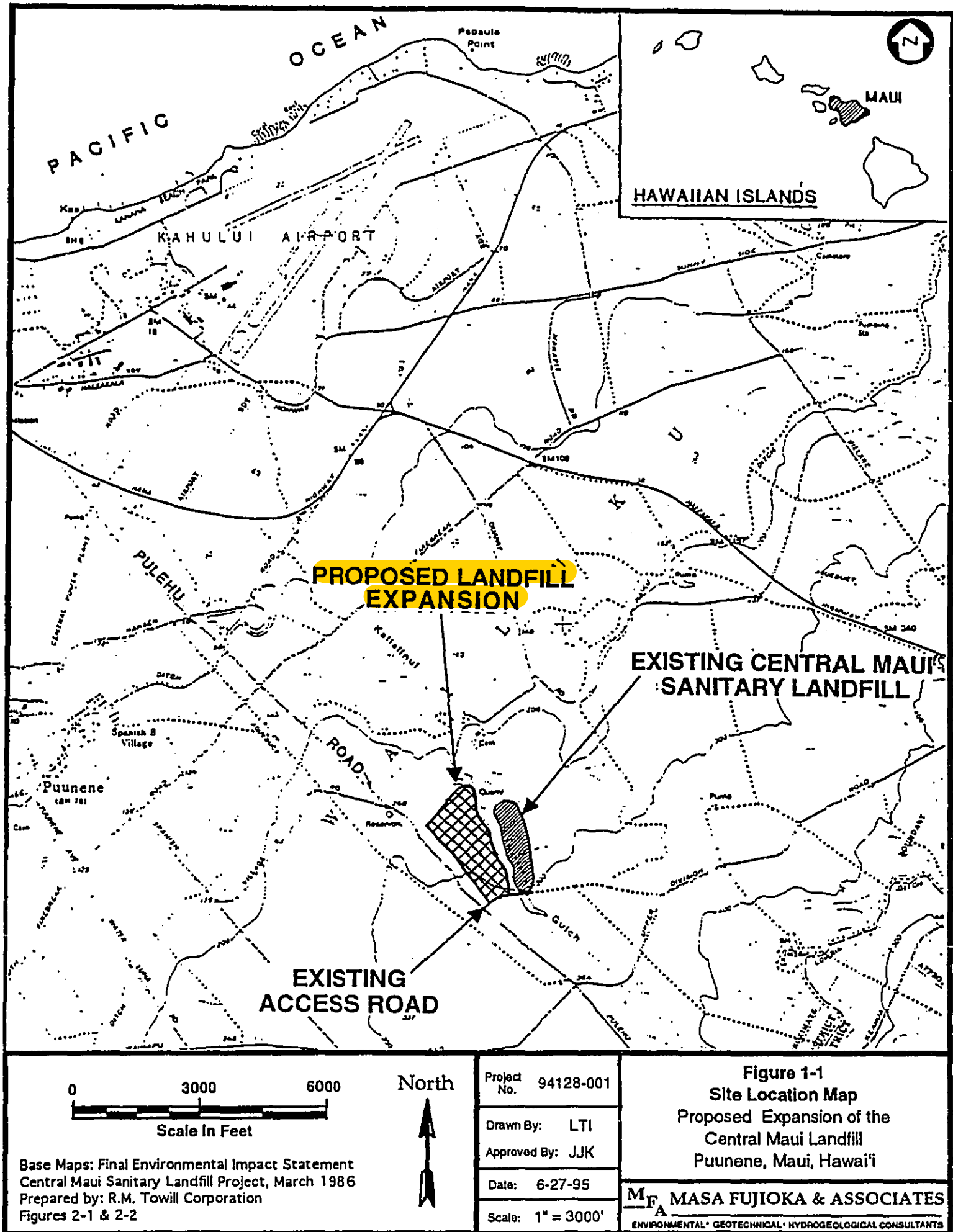
Windblown litter is another potential adverse impact which has been an issue at the existing landfill. Litter at the landfill expansion will be mitigated by a litter control program currently being developed. Additional information on the litter control program is included in this EIS.

Another concern is the impact of the proposed landfill expansion on the traffic in the vicinity. The access road into the current Central Maui Landfill will be used as the entrance into the proposed expansion. There will be a temporary increase in traffic due to the construction of the proposed expansion. However, since landfilling operations in the original Central Maui Landfill are planned to cease when the proposed expansion is ready to receive municipal waste, no additional traffic will be created by the operation of the proposed expansion.

Aesthetic impacts such as potential noise, odor, dust, and vector problems are being considered in the design of the expansion. Litter control and prevention programs and the incorporation of the proposed expansion into current recycling programs are discussed in greater detail in this EIS.

Alternatives to the proposed project include the no-project alternative, an alternate location for a new landfill, solid waste disposal by incineration, and other alternative disposal measures. Some forms of resource recovery will be carried out in conjunction with the proposed expansion. Section 7 of this EIS contains further detail about alternatives to the proposed project and resource recovery issues.

An overall assessment of the impacts indicates that the benefits significantly surpass the adverse impacts. The project will be both beneficial to the County and essential to Maui residents and businesses.



2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROJECT OVERVIEW

The proposed project is an expansion of the Central Maui Landfill in the County of Maui. This Environmental Impact Statement (EIS) addresses the design of Phase IV as a Subtitle "D" Landfill and the planning of Phases V and VI.

A Subtitle "D" landfill is defined according to the following criteria:

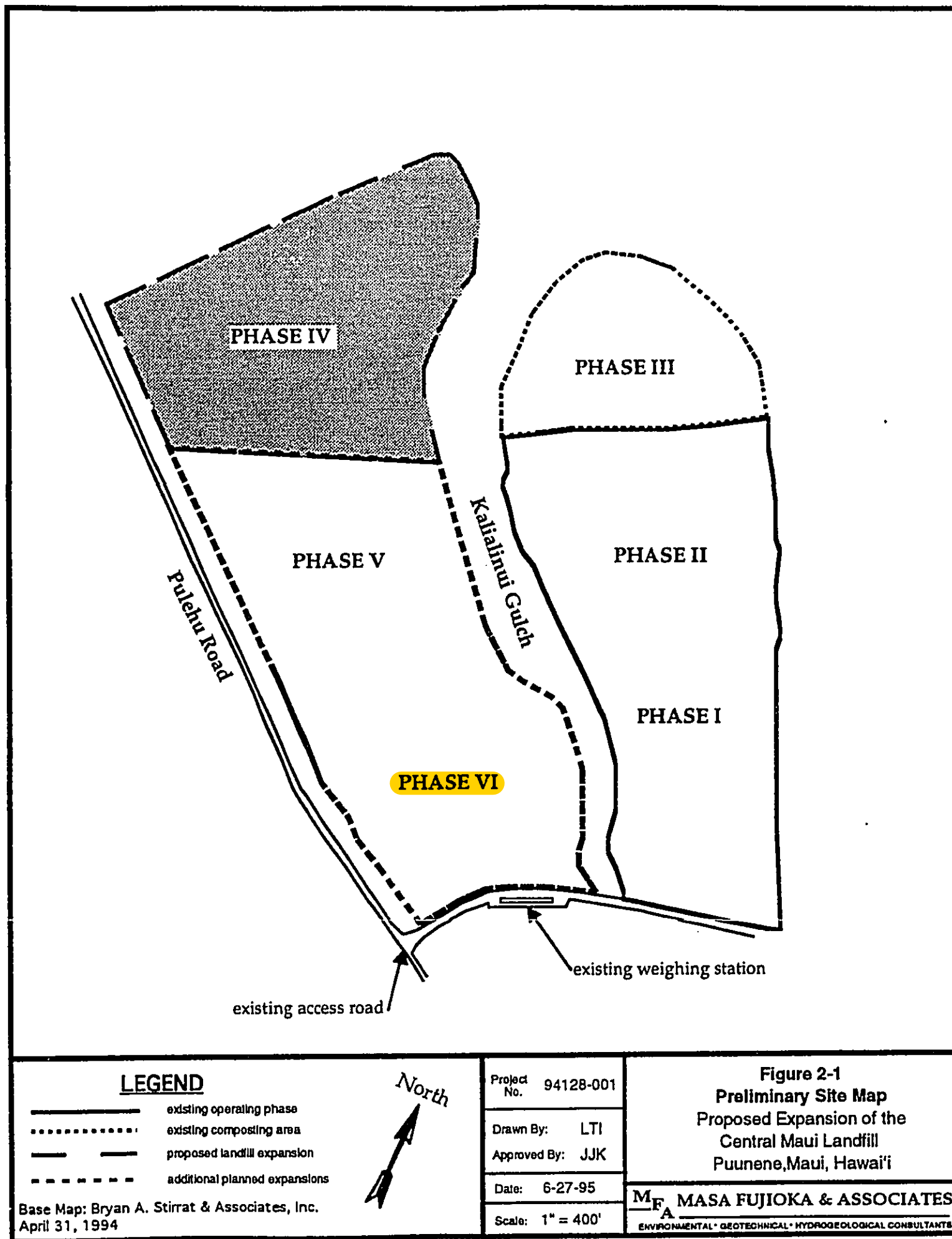
1. The design must ensure that the concentration values of EPA-designated chemical constituents will not be exceeded in the uppermost aquifer at the relevant point of compliance.
2. A composite liner, consisting of an upper component (a minimum 30-mil flexible membrane liner) and a lower component (at least a two-foot layer of compacted soil with the hydraulic conductivity of no more than 1×10^{-7} cm/sec) must be included in the landfill design.
3. A leachate collection system that is designed and constructed to maintain less than a 30-cm depth of leachate over the liner must be included in the landfill design (EPA, 1994).

A more detailed description can be found in 40 CFR §258.40 (EPA, 1994). The proposed new landfill will be designed to meet these criteria.

The project site is located on the northeastern slope of Haleakala on the Island of Maui. It is located approximately 12,000 to 14,000 feet southeast of Kahului Airport and is bordered by a quarry and rock crushing operation to the north, by the existing Central Maui Sanitary Landfill to the east beyond Kalialinui Gulch, and by sugar cane fields on the west and south sides. The sugar cane fields are owned by Alexander and Baldwin and cultivated by HC&S.

The proposed expansion is separated from the existing Phases I, II and III of the Central Maui Sanitary Landfill on the east by Kalialinui Gulch (see Figure 2-1). Because the proposed new phases of the landfill are not a true lateral extension of the existing landfill boundaries, i.e., the existing landfill and proposed landfill are separated by the Gulch, the proposed landfill is not technically considered an expansion under 40 CFR §258. However, we have referred to it as an expansion in this document, since it is located adjacent to the existing landfill.

The proposed project will utilize the present and future disturbed quarry sites as additions to the Central Maui Landfill. The long-range plan for the site is to leave the area as an open field following the closure of the landfill. The proposed Phase IV and V areas are currently being utilized for quarry and rock crushing operations and the proposed Phase VI area is currently being used for



sugar cane cultivation but will be used for quarry operations in the future. The proposed landfill will utilize the 40- to 50-foot cuts into the soil and rock resulting from the quarry operations at the site.

The Central Maui Landfill is centrally located with respect to the major urban areas of Maui. The site is also located in a rural district removed from major cities and towns. This combination of central yet rural location provides an ideal location to continue the operation of a major landfill facility.

2.2 PROJECT BACKGROUND

The County of Maui presently operates two sanitary landfill facilities on the island of Maui (Figure 2-2):

- Hana Landfill - Approximately 34 acres, established in 1969; and
- Central Maui Landfill - Approximately 55 acres, established in 1987.

The Hana Landfill has a very small service area compared to the Central Maui Landfill, which is currently handling 98% of the island's total refuse. The Hana Landfill is planned to still be in service when the proposed expansion of the Central Maui Landfill becomes operational.

Phases I and II of the Central Maui Landfill are projected to reach their design capacity as early as 1999 (Bryan A. Stirrat & Associates, 1994b). Since this landfill is handling most of the island's solid refuse, plans need to be made to either extend the life of the landfill or to build another landfill. The proposed expansion, Phases IV, V, and VI, is planned to extend the life of the landfill until at least 2016 (Bryan A. Stirrat & Associates, 1994b). Phase III is currently used for co-composting (bio-solids and greenwaste) activities. No landfilling activities in Phase III have begun and co-composting activities are planned to be continued in this phase.

The proposed project plan is similar to that utilized for the existing Central Maui Landfill. The proposed expansion will be constructed in the excavated areas of a current quarry operation to make use of the deeply excavated land. The expansion will eliminate the need to search for a new landfill site. Additionally, the Central Maui Landfill is in a central location yet is sufficiently isolated so as not to disrupt the residential and urban communities.

2.3 PROJECT DESCRIPTION

2.3.1 Landfill Site Characteristics

The proposed landfill expansion site consists of Phases IV and V, which is an active quarry operation producing rock material for use in local construction work, and Phase VI, which is currently sugar cane fields. Phase VI is planned to be used as quarry land in the future.

The quarry was originally established by the Navy Seabees in 1939. The landfill was subsequently acquired for private use, first by the Kahului Railroad Company, and then by HC&D, Ltd. in 1966. Ameron currently operates the quarry. The current landfill and quarry are completely surrounded by sugarcane fields. The quarry land as well as the surrounding fields are owned by Alexander and Baldwin, Inc.

Rock is currently being removed from Phases IV and V, located across Kalialinui Gulch northwest of the existing landfill. Quarry operations, including rock crushing, are located north and northeast of the existing landfill. A conveyor belt is currently used to carry rock from Phase IV to the rock crusher located northeast of Phase III. Much of the rock material is used as concrete aggregate or base course material for road construction.

Approximately 55 acres of the former quarry site is occupied by Phases I, II and III of the existing landfill. Phase III is currently used for co-composting (bio-solids and greenwaste) activities. No landfilling activities in Phase III have begun and co-composting activities are planned to be continued in this phase. Another 60 acres of quarry land will be occupied by the proposed landfill expansion, Phases IV, V and VI. The characteristics of the quarry, a large, excavated open area, make this site an ideal location for expansion of the existing landfill.

Additionally, stockpiled material from quarry operations may be available for purchase by the County as cover material for landfill operations. This onsite availability of cover material would minimize added costs and other potential impacts of transporting cover material to the landfill expansion site.

The proposed project is divided into three phases. Phase IV is currently under design and Phases V and VI are in the planning stage.

The proposed landfill expansion into Phase IV will operate as a Municipal Solid Waste Landfill (MSWLF) as defined by federal regulations 40 CFR §257 and §258 known as subtitle D and State of Hawaii Administrative Rules (HAR) Title 11 Department of Health Chapter 58.1 Section 11-58.1-03.

As a MSWLF it will begin operation immediately after required permits have been obtained and begin to receive refuse after the existing landfill Phases I and II reach their design capacities.

2.3.2 Landfill Life

The life of the proposed expansion was determined using the assumption that the entire volume of refuse generated on Maui will be delivered to the Central Maui Landfill (Bryan A. Stirrat & Associates, 1994a).

No change to existing operation characteristics in the Phase IV expansion area will occur nor will any new buildings be constructed or existing buildings be expanded at this time. The maximum anticipated quantity of waste to be received at the proposed landfill expansion will be 670 tons per day or 3,350 tons per week (Bryan A. Stirrat & Associates, 1994a). Six hundred seventy (670) tons per day was also the rate used in calculating the maximum capacity for the existing landfill Phases I and II (Bryan A. Stirrat & Associates, 1993).

The maximum finished grade of the proposed Phase IV will be 340 feet above mean sea level (MSL) roughly conforming to the proposed final grades of Phases I and II. Phases V and VI will be designed at a later date. Phase IV will have a capacity of approximately 2.2 million cubic yards and a life expectancy of approximately six years of life.

At the base of the quarry there is approximately 10 feet of soil and saprolite (basaltic rock which has nearly weathered to soil) overlying basaltic rock (Masa Fujioka & Associates, 1995a). Because of the shallow depth of this soil overburden, it is considered too expensive to excavate lower than 10 feet below existing grades into the basalt rock. However, following a more detailed geotechnical investigation, the exact depth depicted in the final designs may vary from the conceptual designs presented in this EIS.

2.3.3 Landfill Site Development Method

In the past there were three sanitary landfill methods commonly used in the United States: (1) the trench method, (2) the area method, and (3) the ramp method. Since the adoption of 40 CFR, every landfill constructed in the United States after October 9, 1993, must have a bottom liner consisting of a layer of clay overlain by a layer of plastic. Therefore for this landfill, the area method will be the only filling method suitable for this type of liner.

The conceptual design excavation contours for the project to be constructed prior to the addition of refuse material are shown in Figure 2-3. Figure 2-3 also depicts

the conceptual leachate collection and recovery system (LCRS). The LCRS consists of a gravel layer with perforated piping which drains to a leachate sump.

Leachate will be pumped from the sump to a leachate storage tank located at the northwest portion of the proposed expansion area. The LCRS is described in more detail in Section 2.3.4 of this EIS.

The construction phasing of the bottom liner will occur in at least two steps of approximately 15 acres each. Figure 2-4 shows each conceptual phasing step. Landfill operation will begin in the northeastern portion of the site near the proposed sedimentation pond and will progress towards the south in subsequent phases. Figure 2-5 depicts the final fill portion of Phase IV. Phase IV final grades are shown without consideration of anticipated future Phases V and VI because the County does not yet own the property.

All cuts and surface soil fill preparation areas for the placement of the geocomposite liner are designed conceptually as 2:1 slopes for the liner. All refuse fill slopes will be constructed at a 3:1 ratio, with a 20 foot wide bench for every 50 feet of elevation gain. A minimum set back of 50 feet between the property line and the edge of the Limit of Refuse or "Toe" of the landfill is shown in the final elevation grade drawings.

Construction of the landfill will require excavation of onsite overburden soil prior to placement of the liner system and burial of refuse material. The excavated soil will be stockpiled and may be used as daily cover material or as fill material for onsite construction. During the first phase of the liner installation (first 15-acre step), sufficient area on the landfill site will be available for temporary stockpiling of overburden soil. However, when it becomes necessary to install the second step of the liner installation, the excavated material will be removed outside the landfill expansion area and temporarily stored elsewhere on the applicant's property. This offsite storage will be temporary in nature and will be used prior to closure of the proposed landfill expansion.

2.3.4 Proposed Landfill Facilities

Additional features installed as part of the design for the landfill expansion will include drainage control, a composite liner, a LCRS, a groundwater monitoring system, and possibly a landfill gas collection system. These systems are described below.

A. Drainage Control

As shown on Figure 2-5 a perimeter drainage channel will be provided for the landfill expansion to collect runoff from the adjacent watershed and landfill fill slopes. The drainage channel will begin at

The leachate collection and removal system will consist of 6-inch diameter polyvinyl chloride (PVC), or equivalent, pipes spaced so the leachate will not exceed 30 centimeters of head on the HDPE liner. The pipes will connect to a main header line that will transport the leachate to a down gradient sump located at an elevation below that of the sedimentation pond. This is done to prevent any possible cross contamination with clean surface water in the sedimentation pond. All leachate pipes will have an approximate slope of 1% and will be placed in a gravel layer to induce direct flow to the sump. Leachate will be pumped from the sump to an above-ground storage tank for eventual final disposal at a Publicly Owned Treatment Works (POTW). On-site disposal of leachate may be employed for Phases V and VI, but currently there are no plans for on-site disposal of leachate for Phase IV due to a lack of available space.

Piping for the leachate collection and removal system will be both solid and perforated. Solid piping will be used for outfall systems. Perforated pipe and filter fabric material will be used for the interior collection system.

The capacity of this system will exceed twice the anticipated leachate production.

D. Groundwater Monitoring

In accordance with State and Federal regulations, a groundwater protection standard will be developed for the landfill. The groundwater protection standard will require periodic groundwater monitoring including sampling and testing of groundwater, statistical analysis of the data, periodic reporting to the Department of Health (DOH), and contingency plans for responding to a potential release. A minimum of three groundwater monitoring wells will be installed around Phase IV and additional wells will be installed when Phases V and VI are developed. The locations and exact number of wells have not yet been determined but will be included in the groundwater protection standard.

In addition to the monitoring wells, a lysimeter will likely be installed underneath the liner below the sump. The sump basin is the only location, due to the slope and impermeability of the landfill liner, where leachate could collect to form a standing pool. The lysimeter will be able to detect the presence of a leak near the sump long before the groundwater monitoring wells can detect a leak.

The groundwater protection standard will need to be approved by DOH as part of the permit requirements for the landfill. The County is

Condensate generated by the landfill gas would be collected by drain lines connected to bench headers and piped to double-walled sumps strategically placed at low points around the landfill. The collected condensate would then be pumped and trucked to a POTW for disposal.

2.3.5 Landfill Operation and Maintenance

The landfill operation and maintenance will ensure that the landfill is run as efficiently as possible through careful design and inspection. An operations plan will be developed in accordance with DOH permit requirements. The operations plan will be developed later as part of the permitting process and will include, at a minimum, details on operation hours, methods of disposal, recycling operations, site maintenance, hazardous waste exclusion program, liquids monitoring plan, emergency operating procedures, personnel training program, leachate monitoring, groundwater monitoring, surface water monitoring, cover material, special waste acceptance and disposal procedures, landfill gas control and monitoring, site nuisance control measures, and control measures for fire, dust, vector, birds, litter, noise and odor. The operations plan for the existing landfill includes these items; this plan will be modified to address the expansion area. The County is also currently working with the quarry to coordinate quarry and landfill operations.

2.3.6 Landfill Closure Plan

The landfill closure plan will be prepared when landfill operations are near completion. The final closure plan will include a final cover plan, a final grading plan, and a permanent leachate and gas collection and disposal plan. The conceptual final grading plan is illustrated in Figure 2-5. The final closure plan will depend on whether Phases V and VI will be connected with Phase IV into one continuous cell. At this time, the final grading plan for Phase IV does not include the possible future use of Phases V and VI because the County does not yet own the property. Therefore, a final closure plan needs to be developed sometime in the future.

2.3.7 Landfill System Offsite Development

Following the closure of three other landfills in Maui, namely Olowalu (in 1993), Makani (in 1993), and Waikapu (in 1987), a transfer station was constructed at the Olowalu site (Hirose, 1995). The Olowalu station has met the required need for a transfer station in partnership with the existing Central Maui Landfill, and it is not anticipated that additional transfer stations will need to be constructed.